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FUTURE OF THE ARID WEST.

BY THE HON. EDMUND G. ROSS, EX-GOVERNOR OF NEW MEXICO.

LESS than forty years ago and within the memory of men and women not yet old, there was a rush from the northern and eastern states to the West. It was unlike the steady westward migration that had from the beginning of the century been a conspicuous American habit. It was an organized and suddenly conceived movement of people who turned to the West with a definite and determined purpose. I refer to the famous "Kansas movement." Immediately prior to this movement, and in direct connection with it, a very similar movement had been made from the states of the Southwest, notably from the counties of western Missouri. Both crusades were caused by the repeal by Congress of the Missouri Compromise, which up to that time had restricted slavery to the longitudinal line of western Missouri. By that repeal all the country lying west of that line, from the Missouri to and including the Rocky Mountain region, had been opened to negro slavery.

The first crusaders on both sides went armed and eagerly intent on reaching, in the least possible time, the country in dispute. The largely superior numerical force pouring in from the North, in due season assured the success of the Free State cause, soon filled that country, took possession of its most available portions, and drew much of the succeeding migration to the middle and western plains. But it was found after extensive improvements had been made there—farms established and towns built—that the rain-fall was insufficient and could not be depended upon for agricultural pursuits. Though in occasional years it was abundant and bountiful crops were realized, it could not be depended on, as one good crop was liable to be followed by two or three seasons of drought, and more or less absolute crop

failure. This continuing for several years, the settlers in the end became discouraged and many of them abandoned the country, going still further west, not a few to New Mexico. Later, irrigation was resorted to and in the vicinity of enduring streams proved successful. Away from these, however, the expense was great and the returns meagre and discouraging, few localities being of sufficient elevation or possessing the necessary facilities for the storage of water. This was the first signal proof that had till then been afforded of the existence of a semi-arid region, beginning at about the one hundredth degree of longitude and extending indefinitely westward, in which successful agriculture was impossible without irrigation. Much of that region has since been thus redeemed, and doubtless much more will be redeemed in the same way; but it will be most expensive and the prospective cost of its redemption, coupled with the rapid and constant increase in our population, accentuates the necessity for devising more simple and effective methods of irrigation than are now generally practiced or known in the region of the plains.

Large numbers of those who were early forced to abandon the plains of central and western Kansas pushed on into the mountains of the West, very many of them into New Mexico, as I have said. There they came in contact with a civilization antedating by centuries that which they had left. In all the principal valleys they found adequate irrigation works, and abundant and unfailing crops. Though it had been settled for hundreds of years, the region was to these immigrants a new world. The cultivation of land by artificial irrigation has long been practised by the native people of New Mexico, who originally brought the system from Mexico and Spain, but it is still novel to a very large portion of the people of the United States. It has always been, as it is now, carried on by them in the most primitive ways and has developed almost perfect exactness in that form of engineering. A native New Mexican needs no instrument for the securing of levels in locating or laying out an irrigation ditch. Given a known quantity of water supply, he can with his practised eye, by simply walking over the ground, as exactly determine the course required to insure a uniform flow of water at any desired force, and far more quickly, than can the trained engineer with the most perfect instruments. This skill has become a part

of his nature and in a country which must depend upon artificial irrigation for its food product it is a most useful acquirement.

But irrigation in that country and among the native people is confined mainly to the river valleys, few going outside the larger ones for settlement, and as a consequence there are large areas in the valleys of the smaller streams, on the mesas adjacent to arroyos and in the mountains that are practically unsettled and undeveloped. These arroyos, lying as a rule at the foot of mountains and between elevations, could in very many localities be converted into catchment basins for the storage of water, and thus made the basis of a supply to a considerable portion of the territory, at a cost small in comparison to the acreage that could be thus redeemed.

Since the tide of migration turned actively to the western States and Territories lying in what is known as the arid region, especially in the neighborhood of the Rocky Mountains, the subject of irrigation has come to be one of the first importance, as successful cultivation has there been found impossible by the usual methods applicable to the older settlements of the country east of the line of aridity. Various methods have been applied to the solution of the problem during the last three decades, the most general and conspicuous being through the agency of great corporations based on land appropriations and stock companies absorbing great areas of the public domain. No more productive soils are to be found anywhere than on large portions of the great treeless, waterless plains and mountain valleys of what is known as the arid regions. Water alone is needed to make their cultivation most profitable. In many localities, notably in California, the problem has been solved, but only at points more or less directly in proximity to large running streams. But there are yet in New Mexico, and all the mountain region, and even in California, very large areas not accessible to supply from adequate, enduring streams, and therefore not favorable to tillage by the California plan.

The clamor for the appropriation of public money for the establishment of irrigation has had its day, and it is full time that the appropriation of the public lands for the same purpose should also cease. The government has no constitutional power to devote the money or the lands of the public to local or private benefit, and it ought not to have any such power. The idea was an

offshoot of paternalism, and bound, if once generally entered upon, to result in irreparable mischief of a political character, and of damage to other economic callings. Its origin lies in the mistaken doctrine, which now and then crops out in times of commercial and financial depression, that it is the duty of the government to take care of the people, instead of the opposite and correct political axiom, that it is at all times and under all conditions the duty of the people to take care of the government, and of themselves also—to guard and protect it, and to see that the agents entrusted with its administration do not fall short of the duties or go beyond the limits of their trust and make of themselves the government, the rulers, instead of the agents, of the people. One great hindrance to the successful and general institution of irrigation in localities where it is needed and practicable, is the constant and noisy plea that it can be best secured only through great capitalized corporations based on large landed donations from the government. No greater or more insidious danger now threatens the local, financial, economic, and political interests of the West. It is a political, and in a large sense an economic axiom, that they who own the lands of a country will make its laws and govern it; and there is consequently no more effective method for the strengthening and perpetuation of our popular forms than legislation that encourages the distribution of lands among, and their ownership by, the people who occupy them.

By reason chiefly of the pernicious fallacy just mentioned, how the regions under discussion may be watered and thereby reduced to successful popular cultivation and settlement, still remains an unsolved problem. In the more northerly sections the snow and rainfall reduce the difficulty of solution, but in New Mexico and Arizona, especially, the conditions are essentially different and the problem presented a much more difficult one. In these territories the Rocky Mountains gradually diminish in altitude and abruptness, till they fall away and end in great mesas or elevated plateaus along the Mexican border, arid and hot in summer, and which, though abounding in the elements of fertility, remain for lack of water as barren as Sahara. There are rain-falls and occasionally snow in winter, but so seldom and so slight, as a rule, that the arid atmosphere soon dissipates the most that falls, and their moisture is gone. There are a

number of streams, such as the Rio Grande and the Pecos in New Mexico and the Gila, the Salt and others in Arizona, reinforced by a considerable number of smaller ones, with the usual affluents, which, fed by the melting snows from the north, often run bank full in the later weeks of winter and early spring, and also for some days after the brief mid-summer rains ; but their volume soon diminishes, and in the months when their waters are most needed for the growing crops their flow is slackened, while not infrequently at the still later season for irrigation the farmer finds himself without water, especially in the more southerly sections, below the localities of supply in the north.

For these reasons, in the greater portion of the mountain districts, any general, coherent or connected system of irrigation is impossible ; but limited, detached and independent irrigation is practicable everywhere, though, of course, in very limited localities, as in the more elevated mountain areas, where irrigation is possible only in crude ways. It is only on the plains and in the larger valleys that extensive irrigation works can be made applicable or large investments of capital profitable. In other and smaller isolated mountain areas, the methods of storage, distribution and application, must vary according to the configuration of the land, and be confined to limited districts, the rugged nature of the mountains rendering impossible any general system of conserving or distributing the waters or the snow fall. This must be done by the construction of isolated catchment basins in the arroyos and depressions that abound throughout the mountains, from which the water can be distributed to the larger valleys and plateaus lower down. The varying altitude of the sections in which water storage and cultivation can be made profitable is from 3,000 to 8,000 feet, and the clear, dry, bracing atmosphere is charged with health-giving properties. At all seasons of the year, save perhaps in the higher altitudes, it is a positive luxury to be out in the open air, summer and winter. Abounding in all the elements conducive to health, comfort and longevity, it is fitted in a pronounced degree for the home of prosperous communities. In the presence of all these prime concomitants to the comforts of life, it cannot be possible that these regions are condemned to perpetual barrenness and isolation. Nature makes no mistakes and creates nothing in vain. It cannot be that those beautiful, healthful plains and mountains can never be redeemed

from their condition of sterility and converted into comfortable homes. They have the necessary constituents of fertility, though dormant, the grandest of scenery and the most delightful of climates.

It is true that every age must wrestle with and settle, if possible, its own problems, and it is especially true that every generation owes something to those who are to succeed it, as well as to itself. Without a due observance of that obligation there would be little if any progress. Without constant endeavor for the betterment of conditions, there would be no progress and no purpose in life but a brutish momentary satisfaction. The redemption of the earth to the satisfaction of human needs and the promotion of human happiness is therefore among the highest duties of men, and the command of nature to essay its redemption falls with equal force on every succeeding generation. The solution of this problem of irrigation has fallen to this age, and should be settled now, or, at least, put in the way of settlement, for the welfare of this generation as well as of those which are to follow. With a large proportion of the lands of the country now available for settlement held by great corporations and private syndicates, or otherwise for speculative purposes, and our landless poor flocking to the cities or eking out a laborious existence on rented farms, we have reached the open door of an European condition of landlordism and tenantry, under which the class not long since distinctively known as the "American farmer" must soon become extinct. There is no condition, as already stated, so calculated to inspire love of country and loyalty to law, or so conducive to public order, as ownership of the home, be it in city or country, though this influence is most quickly and deeply felt in the rural districts. Therefore, no country can be truly prosperous or long remain the home of freemen, whose producing population is forced to live on rented farms; or even where the great mass of its laboring urban population is forced by the excessive values of realty to a condition of tenantry. There can be no condition like independent freeholding—home owning—especially by laboring people, for the stimulation of love of home and country; and no other American environment has been so productive as the farm of useful public men, who in the past hundred years have left their impress for good upon the history and institutions of their country and the world.

But we are swerving from the beneficent policy that was long so distinctive a feature of our history; and it is time to return before we become a nation governed by an aristocracy of landowners, of landlords and tenants, afflicted by all the evils such conditions bring in their wake.

To those who have noted the tendency of the time during the last half century, this will not seem an overdrawn picture of the danger that has come to threaten our basic industry, and through it the welfare of the country. Most of the great fortunes of the time, individual and corporate, have been accumulated through vast landholdings and speculation in land, secured largely through governmental benefactions to corporations, and the otherwise mischievous administration of ill-considered public land laws. On the other hand, mistaken economic legislation to the discouragement of agriculture and cognate pursuits, has driven to the cities large numbers of the people of the country, to live by varying shifts and uncertain employment, till the cities are filled with a population for which there is little room and less work. It is true that wise and beneficent laws have decreed the right of free homestead and pre-emption to settlers on the public domain, but on the other hand the Congress has thrown away vast empires in area of the public lands to capitalized corporations, and its auction sales have made the public domain a basis of enormous private speculation, while its invitation to settlement and development has been robbed of its effect by the enactment of tariff laws, which create great centres of manufacture and commerce and thus lure the people from the country to the cities. Our beneficent land laws have thus been rendered comparatively of little avail for the purposes of homestead and development, but great cities of princes and beggars have been built up, while the public lands in large degree have been absorbed for purposes of speculation, and still remain the same wilderness of desolation they were at the beginning. There has been little development, very little in comparison to what there should and might have been, on the public domain of the West in the last two decades.

The policy of spoliation indicated has been continued till extension and growth in the West are practically at a standstill, certainly so in comparison with its earlier record. Settlement has reached the limit of production without artificial appliances,

and the great cities of the East have reached the point of congestion from over-crowded populations demanding employment. Prudent fiscal legislation can do much for the betterment of these conditions, but that alone can bring only partial and temporary relief. There would be little philosophy or coherence in any plan therefor that did not contemplate the restoration of the remaining areas of the public domain to settlement and production, and the re-establishment of the movement to its unoccupied portions. But a small proportion of the vast acreage that still remains is impossible of reclamation. It is true that in large portions of the mountain States and Territories a coherent system of irrigation is impossible, but limited, local, independent irrigation is not only possible, but feasible and practicable everywhere, from the great valleys to the timber line, and at less cost to the occupant, proportionately, than by any of the great schemes of irrigation now in operation in the most favored regions.

The greatest hindrance to the institution of successful irrigation is the idea somewhat prevalent that it can be accomplished only through the medium of great capitalized corporations, based on speculative land holding and land absorption. But the public faith in and demand for such methods are passing away. It is found that not only do they fail to meet the demands for homes for the people, for whom the public lands were originally and wisely set aside, but, on the contrary, that such diversion of them is destructive of that purpose. It is coming again to be recognized that the public domain exists primarily for the benefit of those who seek it for homestead purposes solely, and not as an instrumentality for spoliation by the public or the individual, but for the establishment of American homes; and it is to be hoped that not another acre will ever be diverted to any other purpose.

There are no more productive soils on earth, given water, than those of the great plains and mountain valleys of New Mexico. The equability and healthfulness of its climate is unequalled, varying in latitude and altitude to suit all tastes and physical temperaments and conditions. The only question in the matter of its successful irrigation is the water supply. The present visible supply is manifestly insufficient. How it may be permanently increased during the season of planting and growth is a serious question. In view of the capabilities of that country for the maintenance of a population sufficient to give it economic and po-

litical consequence, and of the demand of an increasing population for homes, the question of its reclamation becomes one of mighty import and worthy of profound consideration. A land so fair, so replete with all the elements of healthfulness and vitality, should not be permitted to lie inert and waste, if human ingenuity can compass the stimulation of its wonderful, but undeveloped, energies. The utility of irrigation for the cultivation of the earth has been so fully established by successful experiment that its discussion here would be out of place. That phase of the question has passed into the realm of established fact. It is no longer in dispute. The problem now is, how best to apply it under the varying conditions of localities. It is not a question of fact, but of methods of application, and of the forms of its administration with a view to the best possible results.

Next in importance to the reclamation of land for the production of food stuffs and its preparation for homes for the people, is the prevention, as far as possible, of its absorption by capitalists for speculative purposes. Any measure that left the arid lands open to such absorption would defeat the first and most important purpose of their reclamation. In the case of New Mexico, with whose needs I am most familiar, I would make the institution of a system of irrigation a condition precedent to admission to statehood, as without the reclamation of its arid lands there would be little value in statehood. New Mexico has remained in its original territorial condition for nearly fifty years, and it is in many respects practically in nearly the same economic condition as at the time of its acquisition from Mexico—a mere satrapy of no consequence politically, and of very little in any other respect. There is no good reason for the longer continuance of this condition, but it will continue so long as her lands remain impossible of development. Admission to statehood will not of itself attract people or capital, or materially or permanently change existing conditions; but statehood in connection with irrigation will.

Nor is it the duty or the province, even, of the United States to assume the work of irrigation and reclamation there; but it is to a degree the duty of the federal government to permit the territory to assume the discharge of that duty in any legitimate and proper way that affords reasonable promise of good results. The public lands of New Mexico, the larger part of which will

forever remain valueless, I am convinced after long and careful study of the subject at first hand, afford a legitimate and fruitful resource for the accomplishment of the work of their own reclamation, and I am also confident that the work can be accomplished through that resource practically without expense to the Territory or the general government, establishing at the same time a basis for successful statehood, with the assurance of an early and material increase of population for its maintenance.

The plan I have in mind is simple and easily understood, and could also be readily applied to the other mountain communities of the arid West. Let Congress enact that at a given time, say two years from the date of enactment, a convention shall be held for the preparation of a constitution for the new State. Fix the time for the popular vote of the territory on that proposed constitution at not less than a year subsequent to the promulgation of that act, and arrange that upon the approval of that constitution by Congress and the President the act of admission shall be complete. The act of Congress authorizing a constitution should also provide that upon the admission of New Mexico to the Union as a State, the Territory shall be at once vested with the title to all public lands therein at the date of that act, on condition that it shall within a reasonable time, to be fixed by Congress, commence the work of reclamation by irrigation, authority having been given it to borrow specified sums of money from time to time therefor, and also on condition that as such lands are satisfactorily reclaimed they shall be sold to actual occupants only, at the actual cost of reclamation and in tracts of not more than forty acres to each actual settler. The capacity of the lands of New Mexico for production has been fully tested through several generations, but that capacity has not been developed to any general extent because of the inadequacy of private enterprise to such a work, and because they belong to a general government that has no constitutional right or power to engage in internal improvements. It is folly to ask the general government to expend the public revenues for the benefit of a locality. These arid lands never have been and never can become a source of revenue in the hands of the government. The state, however, by the plan suggested, can reclaim and develop them if permitted to do so, fit them for prosperous homes for tens of thousands of the now landless, homeless people of the country, and make them a source

of revenue, without the cost of one dollar to the government. I believe that the state, thus endowed, will find little difficulty in procuring the necessary means to enable it, by a judicious administration of the trust, to fit for cultivation every reclaimable acre within its boundaries in a reasonable time, and locate a farmer on every one of its forty-acre tracts.

When wisely undertaken, adequate irrigation can be secured at a comparatively small cost per acre. The futility of damming the streams of New Mexico for the purpose of conserving water for irrigation is shown by the fact that almost every dam thus far constructed has been destroyed by flood, to the loss of life and vast amounts of property values in addition to that of the works destroyed; and even were it possible to construct a permanent dam in these streams, the basin thus created would soon fill up with the sand and sediment carried down from the mountains in every flood, and the waters thereby forced out and over adjoining farms to their fatal injury. But as to the most economical and effective method of conserving water for irrigation, the native people of New Mexico have, fortunately, set an object lesson which, strange to say, has been generally overlooked in the elaboration of irrigation theories. All that is needed is to adopt and improve upon their method, which is not by damming but simply placing an obstruction in the stream, so as to divide the current and divert the desired proportion of its waters into a previously constructed acequia, or irrigating canal. By this canal the water is carried across and distributed over the fields under cultivation. The system thus suggested is admirable in its simplicity. Taking the Mexican acequia as a basis, there should be built in the centre of the stream from which water for irrigation is to be taken, a pier high enough to divert a portion of the flood or surplus waters into a lateral canal commencing at the pier, and thence conducted into a reservoir at some point in the foothills lower down the stream and of sufficient elevation to irrigate the lands between it and the stream. This operation should be repeated at different points along the stream as often as the needs of cultivation may require and the topography of the valley will permit—the surplus waters that flow down all the streams and arroyos in torrents from one to three times every year, being stowed away and held for distribution when needed by the growing crops. There is not a running

stream or arroyo whose flood waters cannot be thus impounded, and held as reserve for irrigation at times when most needed, during which all the watercourses are as a rule too dry or too low for the purpose.

Aside from the direct aid to agriculture thus afforded, another very great benefaction to the country will be secured in the prevention of the disastrous floods that every year sweep down all those valleys, washing out farms and sometimes destroying entire villages. By this plan, and at desired intervals, the surplus waters for storage being drawn off, the volume and force of the highest floods that ever visit that country will soon have become so diminished and slackened in their flow as to render serious damage therefrom impossible.

It is a serious question whether admission to statehood under present conditions, even if possible by a vote of the people, so far from being advantageous to New Mexico, would not, on the contrary, become an absolute and permanent detriment—whether the desired immigration and development which this proposition is designed to invite and stimulate would not be repelled, and thus the condition of the people of the new state, instead of being bettered by the change, become actually worse than before, by the establishment in political control of an element of retrogression. This result has happened in the haste to make new States, and the intelligent, progressive people of New Mexico do not desire that their own territory shall constitute such an example. The value of statehood would be incalculably increased by the cession of lands to the new State, the aggregate wealth of the country correspondingly magnified, and the opportunity for the acquirement of homes, independent American homes, by tens of thousands, would be opened to the landless people of the entire country. Three inter-state conventions have been held in the last few years for the purpose of consultation on this important topic and a fourth has just been held at Albuquerque.

It may be objected that the plan I have outlined would be subject to abuse. Is it possible to suggest any effective plan for this purpose that would not be open to the same criticism? Yet it cannot be denied that the opportunities for wilful misdirection of the public domain would thus be reduced to the minimum. As a rule, actual settlers only would become possessed

of the lands, and that of itself would be a great gain. As a rule, too, very considerable areas would be rendered tillable which are not at all likely to be so improved in the absence of any similar provision by the government, and that would be another great gain ; and all done at a small cost to the settler, in comparison with the value to him of the land so redeemed and at no cost in the end to the State or the United States. Of the more than sixty million acres of public land in New Mexico, at least half could be made subject to successful cultivation, adding correspondingly to the tillable area and to the wealth of the world, and affording comfortable homes, in addition to its present population, for a quarter of a million of producing people.

At the rate at which the public lands of the West have been absorbed for speculative purposes by capitalized corporations, the next generation will see the great central West barred against the tide of homeseekers which marked and glorified the history of the past generation. It is time to call a halt before the available area of the public domain shall have been absorbed by speculative capital and closed against that great class for whose benefit as homesteads it was primarily set apart. The man who owns his homestead has a pecuniary as well as a sentimental interest in the conduct and stability of the government that protects him in his right to that home. There is no condition so conducive to loyalty to law and to public order as the ownership of the home. He who owns the roof that shelters him has something at stake, the security and value of which is dissipated in the presence of public disorder. The security, the permanency and the efficacy of popular government have no more earnest champion than the man over whom the flag of his country waves as a symbol and guarantee to him of protection in his home.

EDMUND G. ROSS.